



Department of Energy
Washington, DC 20585

November 12, 1999

Steven A. Herman
Assistant Administrator for
Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Dear Mr. Herman:

I am pleased to transmit to you the fifth annual progress report on Executive Order 12856 for the Department of Energy (DOE). This report includes information submitted by DOE sites to the Toxic Chemical Release Inventory (TRI) for reporting year 1997 and describes DOE's pollution prevention activities during 1997 through early 1999.

The report explains the Department's 80 percent reduction (about 3.8 million pounds) in complex-wide releases and transfers for treatment and disposal of TRI chemicals from the 1993 baseline. A large part of this reduction is the result of better measurement practices at one DOE site and deletion of three chemicals from the TRI list. When these anomalies are accounted for, DOE has increased its reported releases and transfers by 2 percent.

We also report progress in meeting the Department's waste reduction goals, where in 1998 DOE achieved a 67 percent reduction in the generation of radioactive waste, a 64 percent reduction in mixed waste, and a 83 percent reduction in hazardous waste compared to 1993 baseline levels.

If you have questions or need more information, please contact Ms. Jane Powers of my Office of Environmental Policy and Assistance, RCRA/CERCLA Division, at 202-586-7301.

Sincerely,

A handwritten signature in black ink, appearing to read "David Michaels", is written over a horizontal line.

David Michaels, PhD, MPH
Assistant Secretary
Environment, Safety and Health

Enclosure

cc: E.O. 12856 Project Manager
Office of Federal Facilities Enforcement (2261), EPA



EXECUTIVE ORDER 12856
Federal Compliance with Right-to-Know Laws
and Pollution Prevention Requirements

FIFTH ANNUAL REPORT

October 31, 1999



U.S. Department of Energy
Office of Environment, Safety & Health

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Introduction

On August 3, 1993, President Clinton signed Executive Order 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, "pledging the federal government to protect the environment by preventing pollution at the source." Executive Order 12856 directs all federal agencies, including the Department of Energy (DOE), to comply with the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and the Pollution Prevention Act of 1990 (PPA).

This report constitutes the Department's fifth annual progress report to the Administrator of the EPA as directed by Section 4-402 of Executive Order 12856. The report includes information DOE sites reported to the Toxic Chemical Release Inventory (TRI) for reporting year 1997 and describes DOE's pollution prevention activities during 1997 through early 1999.

The DOE pollution prevention program mission is to minimize the generation and release of pollutants to the environment by implementing cost-effective pollution prevention technologies, practices, and policies with partners in government and industry. In a December 27, 1994, memorandum, the Secretary of Energy embraced "pollution prevention not only as a strategy to reduce waste generation but also as the preferred approach to protect the environment, reduce future risks and costs associated with managing wastes and pollutants." The policies and practices outlined in the DOE pollution prevention program are largely implemented in the field, with Headquarters serving an oversight and coordinating role.

While DOE is fully committed to fulfilling the requirements of Executive Order 12856, the releases and transfers of TRI chemicals represent a small portion of DOE's total waste generation profile. Therefore, many of DOE's pollution prevention efforts are focused on other, more significant waste streams, including: radioactive, hazardous and mixed wastes, as well as sanitary wastes. In a May 3, 1996, memorandum, the Secretary of Energy demonstrated the Department's

continued commitment to pollution prevention by setting additional complex-wide goals to be achieved by December 31, 1999 (Appendix A). To meet these commitments, DOE has prepared the *1996 Pollution Prevention Program Plan* which establishes priorities and direction at Headquarters, the Operations Offices, and at the contractor and laboratory sites.

DOE has had a long-standing commitment to implementing the principles contained in Executive Order 12856. DOE's contractor-operated facilities have been active in complying with EPCRA since its passage in 1986. The Department has provided guidance and training materials on the general requirements of EPCRA and specific guidance and training on TRI reporting. DOE has led the federal sector in TRI reporting by voluntarily committing to report TRI releases prior to the issuance of the Executive Order and has worked with the Environmental Protection Agency (EPA) on resolving issues of federal facility TRI reporting.

DOE Policy 450.4, *Safety Management System Policy*, published October 15, 1996, mandates that safety management systems shall be used to systematically integrate safety (defined to encompass environment, safety, and health) into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. Direct involvement of workers during the development and implementation of safety management systems is essential for their success.

On June 27, 1997, the Department took another step to institutionalize the Integrated Safety Management System by publishing a Department of Energy Acquisition Regulations (DEAR) clause 970.5204-2 to be inserted into management and operating contracts at DOE facilities. The clause, entitled *Integration of Environment, Safety, and Health into Work Planning and Execution*, includes the statement that, "For purposes of this clause, safety encompasses environment, safety and health, including pollution prevention and waste minimization;...". Based on this DEAR clause language, the Department is including applicable pollution prevention language in revisions to a November 26, 1997 DOE guide, DOE G 450.4-1, *Integrated Safety Management System Guide*.

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E.O. 12856 Applicability

The term federal agency is defined in Section 2-202 of Executive Order 12856. As an Executive Agency, DOE satisfies the definition of a federal agency. DOE also satisfies the requirement in Section 1-102 of the Executive Order which pertains to owning or operating facilities. Therefore, the provisions of Executive Order 12856 are applicable to the Department and its sites.

Section 3-302 of the Executive Order directs "covered facilities" to develop pollution prevention plans no later than the end of 1995. For purposes of this section, DOE has defined a "covered facility" to be any DOE site which reports under EPCRA Section 313, TRI reporting. The Department has chosen this interpretation of "covered facilities" to focus planning efforts on the sites which must reduce their releases and transfers of toxic chemicals in order for DOE to reach its Department-wide reduction goals. For purposes of all other sections of the Executive Order, a "covered facility" is any facility which meets one or more of the reporting requirements of EPCRA Sections 302, 304, 311-312, and 313.

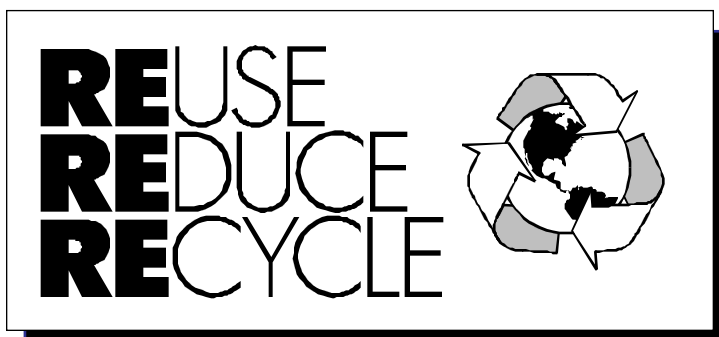
Further, Executive Order 12856, Section 2-203, and EPA's interpretive guidance define pollution prevention to be "source reduction", as defined in the PPA, and other practices that reduce or eliminate the creation of pollutants through: 1) increased efficiency in the use of raw materials, energy, water, or other natural resources; or 2) protection of natural resources by conservation.

Within the Department, however, pollution prevention includes all aspects of source reduction and incorporates waste minimization by expanding beyond the EPA definition of pollution prevention to include recycling. The Department's interpretation of pollution prevention is consistent with the 1996 International Organization for Standardization (ISO) Document 14001, *Environmental Management Systems-Specification with Guidance for Use*, which defines prevention of pollution to be the "use of processes, practices, materials or products that avoid, reduce or control pollution, which may include recycling..." DOE's definition is also consistent with the Council on Environmental Quality's definition of pollution prevention.

Pollution prevention can be applied to all DOE pollution-generating activities, including manufacturing and production operations; facility operations, maintenance, and transportation; laboratory research; research, development and demonstration; weapons dismantlement; decontamination and decommissioning; and legacy waste and contaminated site cleanup.

The Department takes no other exceptions in interpreting the applicability and definitions of Executive Order 12856. The Department understands that Executive Order 12856 in no way alters the EPCRA and PPA reporting obligations of DOE government-owned/contractor-operated facilities.

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DOE's interpretation of pollution prevention agrees with the definition in ISO 14001 which includes recycling.
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DOE Pollution Prevention Policy & Strategy

On May 3, 1996, the Secretary of Energy issued the *1996 Department of Energy Pollution Prevention Program Plan*, along with a Department-wide memorandum outlining the source reduction, recycling, and affirmative procurement goals contained therein. Appendix A of this report contains the complete memorandum. Appendix B of this report contains the pollution prevention strategy from which the Program Plan was built.

As the principal cross-cutting guidance to DOE Headquarters, Operations Office, laboratory, and contractor management, the 1996 Program Plan established six priorities to be completed by fiscal year 1998. To continue the furtherance of pollution prevention, it is anticipated that the Secretary will establish new goals for 2000 and beyond which will continue the initiatives begun under the 1996 Program Plan.

The 1996 Program Plan's six priorities and DOE's progress on accomplishing the priorities are summarized below.

Management Commitment. Two pilot programs were initiated: Re-Engineering Waste Management and a Generator Set-Aside Fee (GSAF) program. In Fiscal Year 1998, both programs continued to successfully promote waste reduction and increase generator awareness. The Re-Engineering Waste Management program makes waste generators and their mission programs more accountable for the waste they generate by having them pay for the treatment, storage and disposal of their newly generated waste. A 1998 pilot project summary report states that the pilot projects demonstrated the potential for cost savings through waste avoidance and efficiencies in all manner of waste operations. The GSAF program charges waste generators a fee, based upon the amount and type of waste generated. The fees are used to fund pollution prevention projects. If expanded Complex-wide, GSAF projects could yield an estimated \$100 million in savings from a \$12 million investment.

Site Goals. Sites were required to include in their pollution prevention plans quantitative, site-specific source reduction and recycling goals, designed to help meet the overall DOE goals. These site goals have been incorporated into many site operating contracts.

Performance Measures. Each fiscal year, the Secretary and the President sign a Performance Agreement which lists measures by which the Department's performance will be evaluated.

In fiscal year 1998, the Department completed all of the pollution prevention items in the performance agreement, including:

- Completing over 500 pollution prevention projects that reduce/avoid 80,000 cubic meters of radioactive, mixed, and hazardous wastes.
- Reducing waste generation from routine operations by more than 60%.

Cost Saving Projects. The High Return-on-Investment (HROI) Program that was successfully piloted in 1996 was implemented at the Operations Office level in 1997. Hundreds of HROI-type projects were completed, thus saving the Department millions of dollars.

Design for Pollution Prevention and Energy Efficiency. Incorporation of pollution prevention and energy efficiency in the design of a facility ("P2 in Design") began in Fiscal Year 1995. Although millions of dollars in avoided costs have been achieved, P2 in design concepts are not systematically applied to the design of DOE's new or modified facilities. To help ensure P2 in Design concepts are systematically applied to the design of DOE's new or modified facilities, the Secretary of Energy designated the Office of Field Management as the lead for institutionalizing the Complex-wide P2 in Design program.

Ensure Compliance. DOE's Office of Environmental Policy and Assistance (EH-413) provides sites with policy, guidance, training opportunities and other technical assistance on compliance with applicable Federal, State, and departmental regulations governing pollution prevention.

*The DOE 1996
Pollution
Prevention
Program Plan
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priorities.*

Toxic Chemical Reduction Goals & Baseline

The Department's *1996 Pollution Prevention Program Plan* commits DOE to the 50% reduction goal for releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal across the DOE complex by December 31, 1999, as directed by Executive Order 12856. To assist in the Department-wide effort, the DOE site pollution prevention plans will address site-level goals for reducing their releases and transfers of listed toxic chemicals.

Further, Executive Order 12856 explicitly states that the baseline year for measuring progress toward the December 1999 goal shall be no later than the 1994 reporting year. Due to the Department's early commitment to TRI reporting and voluntary pollution prevention activities, DOE has seized a leadership opportunity by establishing 1993 as its baseline year for measurement, one year ahead of all other federal agencies, and one year ahead of the Executive Order requirement.

For the purpose of measurement, the Department's baseline is defined by the 23 DOE sites reporting 28 listed toxic chemicals on the 83 TRI Form R reports filed with EPA for the 1993 reporting year. This 1993 baseline is fixed and is amended only in the event that a site submits revised Form R reports. Future measurement against the 1993 baseline will include all sites reporting listed toxic chemicals for each reporting year regardless of whether they reported in the baseline year. Therefore, if a site which did not report in 1993 initiates reporting with the 1994 reporting year, that site's data will be included in the DOE total releases and transfers to be compared against the 1993 baseline. Likewise, the baseline will remain unchanged if a site which reported in the 1993 baseline ceases to report in 1994.

The 50% reduction goal specified in Executive Order 12856 applies only to the total releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal. It does not include off-site transfers for recycling and energy recovery. Thus, only the releases and off-site transfers reported under Sections 8.1 and 8.7 of the annual Form R report are used in measuring progress toward the 1999 reduction goal. Section 8.1 (quantity released) of the Form R report is the amount of toxic chemicals directly discharged to air, water, land, and injected underground at the site. Section 8.1 also includes amounts sent off-site for disposal. Section 8.7 (quantity treated off-site) of the Form R report is the amount of toxic chemicals sent off-site to be treated, including quantities sent to publicly owned treatment works.

In 1996, site revisions, withdrawals, and validation with EPA's Toxic Release Inventory System (TRIS) resulted in a small adjustment to the baseline. The previously reported baseline of 4,677,836 pounds has been amended to 4,677,346 pounds.

To reach the 50% reduction goal by December 31, 1999, DOE must achieve an overall 2,338,673 pound reduction in the reported releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal. To achieve this reduction, the Department needs to focus efforts on the specific chemicals and sites which contribute the largest amounts to the complex-wide total each year. Figure 1 shows the total DOE TRI releases and transfers for the 1994 through 1997 reporting years compared to the 1993 baseline year.

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The Department has taken a leadership opportunity by establishing 1993 as its baseline year, one year ahead of all other federal agencies.
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1997 TRI Reporting

For 1997, 17 DOE sites filed a total of 62 TRI Forms (Form Rs and Form As) for 22 listed TRI chemicals. Six sites submitted a total of eight Form As. The total number of Form Rs submitted was 54 by 16 DOE sites. Five sites, Argonne National Lab- East, Fernald, West Hackberry Strategic Petroleum Reserve (SPR) Site, Bryan Mound SPR, Weeks Island SPR, which met reporting requirements in 1996, did not meet reporting thresholds for any TRI chemicals in 1997. Portsmouth, Hanford and Mound, which did not meet reporting thresholds in 1996 did exceed thresholds in 1997. Tables 1 and 2 show the 1997 total of releases and transfers for treatment and disposal (Form R sections 8.1 plus 8.7) as compared to the 1993 baseline by chemical and by site.

The previously reported 1995 and 1996 total of releases and transfers were 586,463 pounds and 733,618 pounds respectively. As a result of Savannah River Site's (SRS) reported lead revisions for both these years, the TRI total releases and transfers increased to 592,913 pounds for 1995 and 740,578 pounds for 1996.

The 1997 DOE complex-wide total of releases and transfers for treatment and disposal is 922,522 pounds. This is an increase of 181,944 pounds from the 1996 total releases and transfers. In 1997, SRS's reported total of 277,005 pounds was the greatest amount reported for a DOE facility. A significant part of this total resulted from the 240,000 pounds of toluene sent off-site for treatment (Form R section 8.7).

In 1994, the Naval Petroleum Reserve #1's (NPR-1) implemented better measurement practices for underground injection of methanol, which is used for freeze protection in pipelines. The quantity of methanol injected underground is affected by temperature conditions. In 1997, warmer weather conditions and lower productions rates accounted for the reduced amount of methanol use at NPR-1 (see Tables 1 and 2).

The 1997 total releases and transfers represents an 80% (about 3.8 million pounds) reduction in releases and transfers from the 1993 baseline. However, a large part of this reduction was not achieved through source reduction methods as directed by Executive Order 12856. Approximately 3.3 million pounds of the reduction in methanol releases is due to the NPR-1's implementation, in 1994, of better measurement practices for underground injection of methanol. Deletions of acetone and non-aerosol forms of sulfuric acid, and non-aerosol forms of hydrochloric acid from the TRI list of chemicals are largely the reason for reported reductions in these chemicals.

If the NPR-1's methanol reports and all the sulfuric acid, acetone, and hydrochloric acid reports for 1993-1997 are excluded, DOE has increased its reported releases and transfers complex-wide from 594,864 pounds to 609,666 pounds, an increase of 2%. This increase is due primarily to SRS's off-site treatment for toluene and Oak Ridge Y-12's first time reporting for copper compounds and manganese compounds.

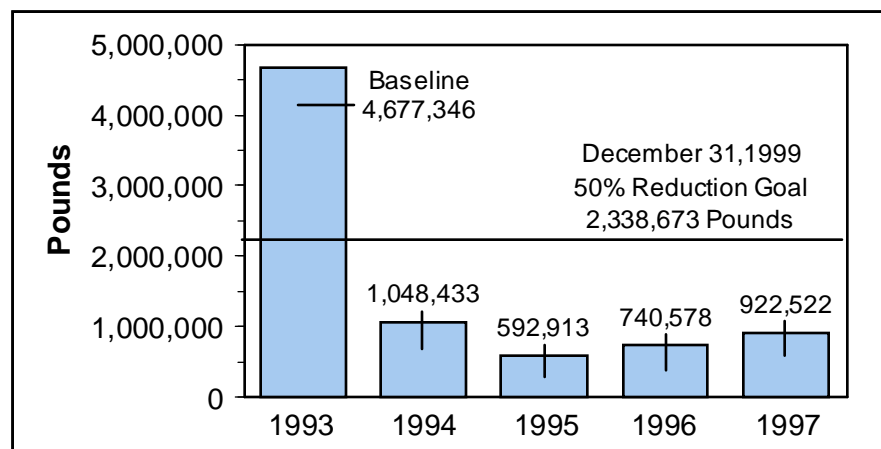


Figure 1. Total DOE TRI Releases and Transfers (in pounds)

From 1993 to 1997, DOE has achieved an 80% reduction in the complex-wide releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal.

Table 1: Comparison of 1997 & 1993 DOE TRI Reporting by Toxic Chemical (in pounds)*Understanding our data...**These four TRI chemicals represent 75% of the DOE 1997 total releases and transfers for treatment and disposal.*

TRI Chemical	1993 Section 8.1+8.7	1997 Section 8.1+8.7	1993-1997 % Change
Methanol	3,665,979	200,852	(95%)
Sulfuric Acid	311,903	--	(100%)
Dichlorotetrafluoroethane	170,000	--	(100%)
Hydrochloric Acid	154,745	144,645	(7%)
Nitric Acid	126,268	93,202	(26%)
Ammonia	113,350	29,143	(74%)
1,1,1- Trichloroethane	20,405	--	(100%)
Chlorine	18,003	--	(100%)
Xylene (mixed isomers)	16,644	26,107	57%
Trichloroethylene	15,900	--	(100%)
Toluene	12,408	257,290	1,974%
Methyl Ethyl Ketone	9,800	--	(100%)
Dichloromethane	9,289	--	(100%)
Methyl Isobutyl Ketone	9,004	--	(100%)
Lead	8,666	20,293	134%
Hydrogen Fluoride	3,519	2,879	(18%)
Ethylene Glycol	2,808	9,032	222%
Acetone	1,930	--	(100%)
Trichlorofluoromethane	1,800	--	(100%)
Methyl Tert-Butyl Ether	1,674	--	(100%)
Manganese Compounds	1,300	42,609	3178%
1,2,4- Trimethylbenzene	573	86	(85%)
Benzene	378	14,300	3,683%
Copper Compounds	--	34,769	N/A
Freon 113	--	5,340	N/A
Nitrate Compounds	--	26,657	N/A
Other TRI Chemicals	1,000	15,318	1,432%
TOTAL	4,677,346	922,522	(80%)

Table 2: Comparison of 1997 & 1993 DOE TRI Reporting by Site (in pounds)*SRS, Y-12, and NPR-1, & INEEL account for 84% of DOE's 1997 total releases and transfers for treatment and disposal.*

DOE Site	1993 Section 8.1+8.7	1997 Section 8.1+8.7	1993-1997 % Change
Naval Petroleum Reserve #1	3,782,920	193,192	(95%)
Idaho National Engr. & Environmental Lab ¹	369,454	95,970	(74%)
Portsmouth Gas. Diff. Plant	171,918	193	(99%)
Energy Tech. Engr. Center	101,249	10,074	(90%)
Savannah River Site	79,372	277,005	249%
Oak Ridge Y-12 Plant	74,201	205,742	177%
Pinellas Plant	45,824	--	(100%)
Stanford Linear Accelerator	12,300	--	(100%)
Oak Ridge National Lab	7,353	55,048	649%
East Tennessee Technology Park ²	6,388	2,311	(64%)
Brookhaven National Lab	5,935	--	(100%)
Los Alamos National Lab	5,570	720	(87%)
Argonne National Lab-East	4,007	--	(100%)
Rocky Flats Plant	3,555	--	(100%)
Fermi National Accelerator	3,157	3,538	12%
Kansas City Plant	1,400	975	(30%)
Naval Petroleum Reserve #3	95	67,100	70,532%
West Valley Demonstration Proj.	--	1,320	N/A
Other DOE Sites	2,648	9,334	252%
TOTAL	4,677,346	922,522	(80%)

¹ Formerly known as Idaho National Engineering Lab² Formerly known as Oak Ridge K-25 Site

The dashes (--) indicate no reports were submitted for these chemicals, N/A indicates not applicable.

1997 TRI Reporting (continued)

While reductions in chemicals at some sites can be attributed to ceased or decreased production/operation, some sites experienced increased production/operation and many sites continue to achieve true reductions in TRI chemicals through: source reduction activities such as chemical substitutions; equipment and process modifications; and recycling rather than disposing of chemicals. Examples of source reduction, recycling methods and other activities at DOE sites are described below:

Idaho National Engineering & Environmental Lab (INEEL)

In 1998, INEEL's pollution prevention projects included recycling **lead** scrap, lead acid batteries, and **silver** scrap.

Oak Ridge Y-12 Plant (Y-12)

Due to EPA's May 1997 ruling and guidance regarding clarification of reporting activities, the coal-fired Steam Plant at Y-12, considered their coincidental manufacture of **hydrochloric acid**, **copper compounds**, and **manganese compounds** for the first time for the 1997 reporting year. Also, there was an increased quantity of **methanol** reported because of equipment failure coupled with leaks in the system.

Yucca Mountain Site Characterization Office (YMSCO)

YMSCO began a program to purchase nonhazardous low-**mercury** lamps to replace over time the high-mercury lamps, which will ultimately eliminate this hazardous waste stream.

Lawrence Livermore National Laboratory (LLNL)

LLNL continues to replace **Freon 113** with alternative solvents combined with alternative cleaning methods (i.e., ultrasound) in most small parts cleaning operations. Also, LLNL installed a CFC-113 purification system that is capable of 95% recovery of the spent coolant.

Western Area Power Administration

The Western Area Power Administration's auto, truck and other air conditioners are serviced by certified technicians using improved techniques for charging the equipment, thereby reducing/eliminating the escape of **freon** into the atmosphere.

Figure 2. Examples of Source Reduction Activities and Other Activities at DOE Sites

**Argonne National Laboratory-East
(ANL-East)**

In 1996, ANL-East installed a new air conditioning system at their Advanced Proton Source Facility. Due to leaks in the new system, **chlorodifluoromethane** was released. The leak was fixed and no further release was detected in 1997.

**Energy Technology
Engineering Center (ETEC)**

ETEC's routine maintenance included correcting any leak problems to prevent increased releases of **ammonia**.

Fermi National Accelerator

In 1997, there were no fugitive emissions for **trichlorofluoromethane** because of high-efficiency purge units that were installed to recover any releases from leaks in the equipment. Also, Fermi's fire protection systems are operated manually so no fugitive emissions were produced for **bromotrifluoromethane**. Increased releases last year were due to flooding.

Rocky Flats Environmental Technology Site (RFETS)

In July 1998, the RFETS Water Treatment Plant installed a calcium hypochlorite disinfection system to eliminate the use of **chlorine** gas. The new system uses a non-gaseous chlorinator that dissolves and distributes hypochlorite pellets into the water stream. The chlorinator provides a controlled and relatively consistent contact area between the pellet surfaces and the water flowing through the unit.

Rocky Flats Environmental Technology Site

Rocky Flats recycled stainless steel, **copper**, iron, **lead**, and aluminum recovered from decontamination and decommissioning activities. A number of old pit transfer carts formerly used in process operations were disassembled, and the resulting elemental **lead** sheets were segregated, surveyed and free-released for reuse.

Savannah River Site (SRS)

The major cause of SRS's increased off-site transfers of **toluene** and **xylene (mixed isomers)** was due to off-site shipment of chemical, metals, and pesticide pit soils to an incinerator for treatment. For spill and leak prevention, SRS improved procedures for loading, unloading, and transfer operations of **nitric acid**, **nitrate compounds**, and **sodium nitrite**. SRS decontaminated legacy **lead** for reuse onsite, avoiding offsite treatment and disposal.

1997 TRI Reporting (continued)

Table 3 shows DOE's reported TRI on-site and off-site releases, other on-site waste management, and transfers for further waste management for reporting years 1993-1997. DOE's total routine operation releases decreased from 4,643,080 pounds in 1993 to 684,228 pounds in 1997. In 1997, there was a reduction reported in total air emissions, underground injections, and on-site land releases from 1993. Releases to surface water increased in 1995, 1996, and 1997. A significant part of this increase was from Savannah River Site's first time reporting for nitrate compounds in 1995, and increased release in 1996 and 1997. Underground injection decreased from 1993-1995, increased in 1996, and decreased again in 1997. This fluctuation was due to the NPR-1 facility's better measurement practices for methanol coupled with the amount of

methanol used being dependent on the winter weather. From 1996 to 1997 the greatest increase in on- and off-site releases was from total air emissions. As a result of the ruling published by EPA in the May 1997 *Federal Register* (62 FR 23833) and EPA guidance regarding clarification of reporting activities, the coincidental manufacture of hydrochloric acid as a combustion by-product was reported for the first time by Oak Ridge Y-12 in 1997. A significant part of the total air emissions increase resulted from Y-12's reporting.

The reported total of other on-site waste management decreased by 23% from 1993 to 1997. However, the totals reported for amount treated on-site in 1997 increased from 1996 by about 3.4 million pounds of which about 2.8 million pounds came from INEEL's first time reporting for nitrate compounds

Table 3: 1993-1997 DOE TRI On-Site and Off-Site Releases, Other On-Site Waste Management, and Transfers for Further Waste Management Reported (in pounds)

	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>Change 1993 to 1997</u> (Pounds) (Percent)	
<u>On-Site Releases</u>							
Total Air Emissions (5.1+5.2)	555,557	291,694	203,101	196,952	377,358	-178,199	(32%)
Surface Water (5.3)	12,921	3,766	10,782	27,461	33,217	20,296	157%
Underground Injection (5.4)	3,762,430	445,531	325,751	505,541	173,653	-3,588,777	(95%)
On-Site Land Releases (5.5)	301,306	232,273	48,737	17,637	96,152	-205,154	(68%)
Total	4,632,214	973,264	588,371	747,591	680,380	-3,951,834	(85%)
<u>Off-Site Releases</u>							
Transfers Off-Site to Disposal (6.2)	11,556	11,853	2,501	1,174	22,212	10,656	92%
Transfers Off-Site to POTWs (metal or metal compounds only) (6.1)	0	0	0	0	250	250	N/A
Total	11,556	11,853	2,501	1,174	22,462	10,906	(94%)
<u>Non-Routine Operation Releases</u>							
On-Site Release or Off-Site Disposal from Remedial Actions or One-Time Events (8.8)	690	19,265	35,603	8,289	18,614	17,924	2598%
Total Routine Operation Releases [on and off-site releases minus non-routine releases (8.8)]	4,643,080	965,852	555,269	740,476	684,228	-3,958,852	(85%)
<u>Other On-Site Waste Management</u>							
Recycled On-Site (8.4)	2,890,709	2,521,712	307,661	362,585	435,040	-2,455,669	(85%)
Energy Recovery On-Site (8.2)	0	0	0	0	0	0	0
Treated On-Site (8.6)	2,646,803	1,175,492	383,490	369,847	3,807,607	1,160,804	44%
Total	5,537,512	3,697,204	691,151	732,432	4,242,647	-1,294,865	(23%)
<u>Transfers Off-Site for Further Waste Management</u>							
Transfers to Recycling (6.2)	72,511	67,592	93,535	28,771	342,773	270,262	373%
Transfers to Energy Recovery (6.2)	0	0	0	0	0	0	0
Transfers to Treatment (6.2)	21,965	44,785	7,320	2,240	249,118	227,153	1034%
Transfers to POTWs (6.1)	415	260	0	0	250	-165	(40%)
Other Off-Site Transfers (6.2)	0	0	0	0	0	0	0
Total	94,891	112,637	100,855	31,011	592,141	497,250	524%

Note: Numbers in parenthesis after release type refers to the corresponding Form R section. N/A means not applicable.

and increased reporting for nitric acid. Amounts transferred off-site for further waste management, including, transfers to recycling, energy recovery, treatment, POTWs, and other off-site transfers increased by about 497,250 pounds from 1993 to 1997.

Table 4 shows the same data as Table 3 except it excludes delisted chemicals, chemicals added to the TRI in 1995, and all ammonia, hydrochloric acid, sulfuric acid, and NPR-1's methanol. For DOE, the delisted chemicals include acetone (effective with 1994 reporting year) and ammonium nitrate (solution) (effective with the 1995 reporting year). DOE facilities reported on n-hexane and nitrate compounds when they were added to the TRI chemical list in 1995.

Analysis of this data subset indicates there was a 33% decrease in total routine operations releases from 1993 to 1997. When the chemicals mentioned above are excluded, underground injection increased from 1996 to 1997 by 88 pounds compared to a decrease of about 332,000 pounds when all chemicals are included (see Table 3). Amounts treated on-site increased from 1996 to 1997 by about 1.9 million pounds, of which about 1.3 million pounds came from nitric acid treatment at INEEL (see Table 4).

In Table 4, increases that were shown as decreases in Table 3, such as on-site land releases (from 1993 through 1995), are a result of the excluded chemicals accounting for more of the reported totals for those reporting years.

Table 4: 1993-1997 DOE TRI On-Site and Off-Site Releases, Other On-Site Waste Management, and Transfers for Further Waste Management Reported (in pounds) excluding delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, sulfuric acid, and NPR-1's methanol

	1993	1994	1995	1996	1997	Change 1993 to 1997	
						(Pounds)	(Percent)
<u>On-Site Releases</u>							
Total Air Emissions (5.1+5.2)	426,986	215,664	138,973	149,538	203,174	-223,812	(52%)
Surface Water (5.3)	11,934	3,766	3,542	5,803	6,860	-5,074	(43%)
Underground Injection (5.4)	12,412	10,401	10,509	6,158	6,246	-6,166	(50%)
On-Site Land Releases (5.5)	10,546	12,273	45,472	16,006	94,866	84,320	800%
Total	461,878	242,104	198,496	177,505	311,146	-150,732	(33%)
<u>Off-Site Releases</u>							
Transfers Off-Site to Disposal (6.2)	11,556	3,848	2,501	1,174	22,212	10,656	92%
Transfers Off-Site to POTWs (metal or metal compounds only) (6.1)	0	0	0	0	250	250	N/A
Total	11,556	3,848	2,501	1,174	22,462	10,906	94%
<u>Non-Routine Operation Releases</u>							
On-Site Release or Off-Site Disposal from Remedial Actions or One-Time Events (8.8)	259	19,224	31,703	8,279	18,614	18,355	7087%
Total Routine Operation Releases [on and off-site releases minus non-routine releases (8.8)]	473,175	226,728	169,294	170,400	314,994	-158,181	(33%)
<u>Other On-Site Waste Management</u>							
Recycled On-Site (8.4)	184,583	104,637	307,661	362,585	435,040	250,457	136%
Energy Recovery On-Site (8.2)	0	0	0	0	0	0	0
Treated On-Site (8.6)	1,066,023	302,934	226,390	209,927	2,172,693	1,106,670	104%
Total	1,250,606	407,571	534,051	572,512	2,607,733	1,357,127	109%
<u>Transfers Off-Site for Further Waste Management</u>							
Transfers to Recycling (6.2)	4,400	25,700	59,735	7,282	270,577	266,177	6049%
Transfers to Energy Recovery (6.2)	0	0	0	0	0	0	0
Transfers to Treatment (6.2)	2,774	26,853	7,020	2,094	249,007	245,484	8849%
Transfers to POTWs (6.1)	15	10	0	0	250	235	1567%
Other Off-Site Transfers (6.2)	0	0	0	0	0	0	0
Total	7,189	52,563	66,755	9,376	519,834	512,645	7131%

Note: Numbers in parenthesis after release type refers to the corresponding Form R section. N/A means not applicable.

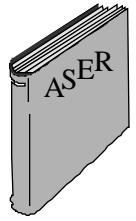
EPCRA Reporting

Executive Order 12856 directs all federal facilities to comply with the EPCRA reporting requirements described below, regardless of Standard Industrial Classification (SIC) code. EPCRA contains four major provisions: planning for chemical emergencies (Sections 302-303); emergency notification of chemical accidents and releases (Section 304); reporting of hazardous chemical inventories (Sections 311 and 312); and toxic chemical release inventory reporting (Section 313).

These provisions require DOE sites to notify state emergency response commissions (SERCs) and local emergency planning committees (LEPCs) of the presence of potentially hazardous substances on their sites and to report on the inventories and environmental releases of those substances. The intent of these requirements is to provide the public with information on hazardous chemicals in their communities, enhance public awareness of chemical hazards, and facilitate development of state and local emergency response plans.

While both Executive Order 12856 and DOE policy direct all "covered" facilities to comply with these EPCRA provisions prior to 1995, quantitative information was only available for the "covered" DOE facilities which reported under EPCRA section 313. Beginning with the 1995 Annual Site

Environmental Reports (ASERs), sites provided more complete information on EPCRA compliance. The information presented in Table 6 and summarized below was collected as part of an internal validation of the 1997 DOE TRI data reported by the 17 DOE sites (see Table 5) and some additional information obtained from the 1997 ASERs.



EPCRA 302-303. Executive Order 12856 states that federal facilities were to submit their emergency planning notification to the cognizant SERC and LEPC by March 3, 1994 (EPCRA 302). Additionally, facilities were directed to submit information for the committees to prepare Comprehensive Emergency Response Plans by August 3, 1994 (EPCRA 303). For 1997, 34 DOE sites either submitted the appropriate new or revised information or were not required to submit information because they fulfilled this requirement in a prior year.

EPCRA 304. In January 1994, federal facilities were to begin submitting emergency notifications of releases of Extremely Hazardous Substances (EHSs) (EPCRA 304). In 1997, 7 sites submitted notifications for EHS releases while 25 sites did not have releases requiring such a notification.

Beginning with the 1995 ASERs, sites provided more complete information on EPCRA compliance.

Table 5: The 17 DOE Sites Reporting under EPCRA 313 During 1997

East Tennessee Technology Park ¹	Mound Plant
Energy Technology Engineering Center	Naval Petroleum Reserve #1
Fermi National Accelerator	Naval Petroleum Reserve #3
Hanford Site	Oak Ridge National Laboratory
Idaho National Engineering and Environmental Laboratory	Oak Ridge Y-12 Plant
Kansas City Plant	Paducah Site ²
Lawrence Livermore National Laboratory	Portsmouth Gaseous Diffusion Plant
Los Alamos National Laboratory	Savannah River Site
	West Valley Demonstration Project

¹ Formerly known as the Oak Ridge K-25 Site.

² Paducah Site only submitted one Form A.

EPCRA 311-312. By August 3, 1994, Executive Order 12856 directed facilities to submit Material Safety Data Sheets (MSDSs) as required by EPCRA Section 311. Also, by March 1, 1995, federal facilities were to submit an emergency and hazardous chemical inventory form (Tier I/II report) under EPCRA 312. In 1997, 30 sites complied with these requirements, while 3 reported that they were not required.

EPCRA 313. By July 1, 1995, federal facilities meeting reporting requirements were to submit TRI Form R and/or Form A reports. In 1997, 17 sites reported while 22 sites were not required to report. Reporting Year 1998 TRI reports were submitted in July 1999 and will be reported in next year's Annual Report.

Table 6: Summary of 1993-1997 EPCRA Reporting by DOE Facilities

	YES	NO	Not Required
1993			
EPCRA 302-303: Planning Notification	14 Sites	0 Sites	12 Sites ^a
EPCRA 304: EHS Release Notification	11 Sites	1 Site	14 Sites ^b
EPCRA 311-312: MSDS/Chemical Inventory	24 Sites	0 Sites	2 Sites
EPCRA 313: TRI Reporting	23 Sites	0 Sites	3 Sites ^c
1994			
EPCRA 302-303: Planning Notification	15 Sites	0 Sites	11 Sites ^a
EPCRA 304: EHS Release Notification	12 Sites	0 Sites	14 Sites ^b
EPCRA 311-312: MSDS/Chemical Inventory	25 Sites	0 Sites	1 Site
EPCRA 313: TRI Reporting	22 Sites	0 Sites	4 Sites ^c
1995*			
EPCRA 302-303: Planning Notification	16 Sites	0 Sites	18 Sites ^a
EPCRA 304: EHS Release Notification	8 Sites	1 Site	27 Sites ^b
EPCRA 311-312: MSDS/Chemical Inventory	34 Sites ^d	0 Sites	6 Sites
EPCRA 313: TRI Reporting	18 Sites	0 Sites	23 Sites ^c
1996*			
EPCRA 302-303: Planning Notification	10 Sites	0 Sites	19 Sites ^a
EPCRA 304: EHS Release Notification	7 Sites	1 Site	22 Sites ^b
EPCRA 311-312: MSDS/Chemical Inventory	28 Sites ^e	0 Sites	6 Sites
EPCRA 313: TRI Reporting	19 Sites	0 Sites	16 Sites ^c
1997			
EPCRA 302-303: Planning Notification	16 Sites ^g	0 Sites	18 Sites ^a
EPCRA 304: EHS Release Notification	7 Sites	1 Site	25 Sites ^b
EPCRA 311-312: MSDS/Chemical Inventory	30 Sites ^f	0 Sites	3 Sites
EPCRA 313: TRI Reporting	17 Sites	0 Sites	22 Sites ^c

^aEPCRA 302-303 notification requirement was fulfilled in a prior year

^bSites did not have EHS releases requiring EPCRA 304 notification

^cSites did not exceed the EPCRA 313 manufacture, process, or otherwise use thresholds

^dTwo sites indicated "yes" for reporting under EPCRA section 312 only. One site indicated "yes" for reporting under EPCRA section 311 only.

^eThree sites indicated "yes" for reporting under EPCRA section 312 only.

^fFive sites indicated "yes" for reporting under EPCRA section 312 only.

^gFour sites indicated "yes" for reporting under EPCRA section 302 only.

*1995 & 1996 data includes recent updates.

Reviews & Compliance

■ ■ ■ ■ ■ ■ ■ ■ ■ ■
In late 1997, DOE established a TRI Focus Group, composed of DOE and contract employees with experience in EPCRA Section 313 reporting.
 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Sections 3-302(d), 5-502, 5-503, and 5-506 of Executive Order 12856 pertain to ensuring compliance with the provisions of the order. Specifically, these sections direct agencies to: 1) conduct assessments as necessary to ensure the development of site pollution prevention plans; 2) take all necessary actions to prevent pollution; 3) conduct internal reviews and audits to monitor compliance with the EPCRA and PPA reporting requirements; and 4) when the agency is notified of non-compliance, achieve compliance as promptly as practicable.

During 1997, the Department's Office of Oversight Analysis conducted a review of the Department's environmental management programs, with a specific focus on site environmental restoration and waste management activities (Oversight Analysis, Environmental Management, Sept. 1998). The evaluations that were conducted generally found effective pollution prevention programs. However, it was also determined that the ability of existing programs to address waste material issues as they arise is compromised at some sites by a system that generally rewards contractors for the amount of waste dispositioned rather than for reducing waste sources and wastes generated, and that not all sites have waste minimization and pollution prevention built into their award fee criteria. Further, the review found that many site managers have adopted a reactive practice of focusing on "high-profile" waste conditions that could attract attention of regulatory authorities, and that this approach may divert resources from the development and implementation of comprehensive and integrated environmental management programs, and also limit the site's ability to effectively implement and refine its waste minimization and pollution prevention programs.

DOE sites are required by DOE Order 231.1, "Environmental, Safety, and Health Reporting" to prepare comprehensive environmental reports or Annual Site Environmental Reports (ASERs) each year. One section of each site report discusses compliance with the EPCRA and PPA reporting requirements. The guidance for the preparation of the ASER report has been revised so that sites will provide more complete information on EPCRA compliance.

The Department has an occurrence reporting system which tracks notices of non-compliance, notices of violation and similar

documents which field sites receive from state and federal regulators. The DOE Environmental Compliance Violations Database is now available on the Office of Environmental Policy and Assistance (OEPA) worldwide website for the general public to access at <http://tis.eh.doe.gov/oepa>. During the period from January to December 1998, there were no reported violations or reports of non-compliance with EPCRA.

On November 17, 1998, EPA published a draft *Multimedia Strategy for Priority Persistent, Bioaccumulative, and Toxic Pollutants* in the *Federal Register* (63 FR 63926). EPA developed this strategy to overcome the remaining challenges in addressing the priority persistent, bioaccumulative and toxic (PBT) pollutants. Through this strategy, EPA committed to create an enduring cross-office system that will address the cross-media issues associated with priority PBT pollutants.

In a string of complementary regulatory actions, on January 5, 1999, EPA published a Notice of Proposed Rulemaking in the *Federal Register* (64 FR 688) regarding PBT chemicals. EPA is proposing to lower reporting thresholds for certain PBT chemicals and to add certain PBT chemicals to the list of chemicals subject to EPCRA section 313 reporting. In addition, EPA is proposing to lower thresholds for dioxin and dioxin-like compounds, which were previously proposed to be added to the 313 toxic chemical list.

EPA's latest proposed PBT rulemaking, published in the *Federal Register* on August 3, 1999 (64 FR 42221), proposed to lower the reporting thresholds for lead and lead compounds subject to reporting under Section 313 of EPCRA and Section 6607 of the PPA. Other important aspects of this proposal pertained to changes to the *de minimis* exemption and Form A Reporting for lead and lead compounds. DOE's comments on these proposed rules are available on the OEPA website.

In November 1997, DOE's Office of Environmental Policy and Assistance established a DOE TRI Focus Group, composed of DOE and contract employees with experience in completing TRI Form Rs. This Group conducts monthly conference calls to discuss the various changes that EPA is proposing for the TRI Form R, discuss questions on interpretation of EPA's guidance for Form R reporting, and help formulate the Department's comments to various EPCRA 313 rulemakings.

Pollution Prevention Plans

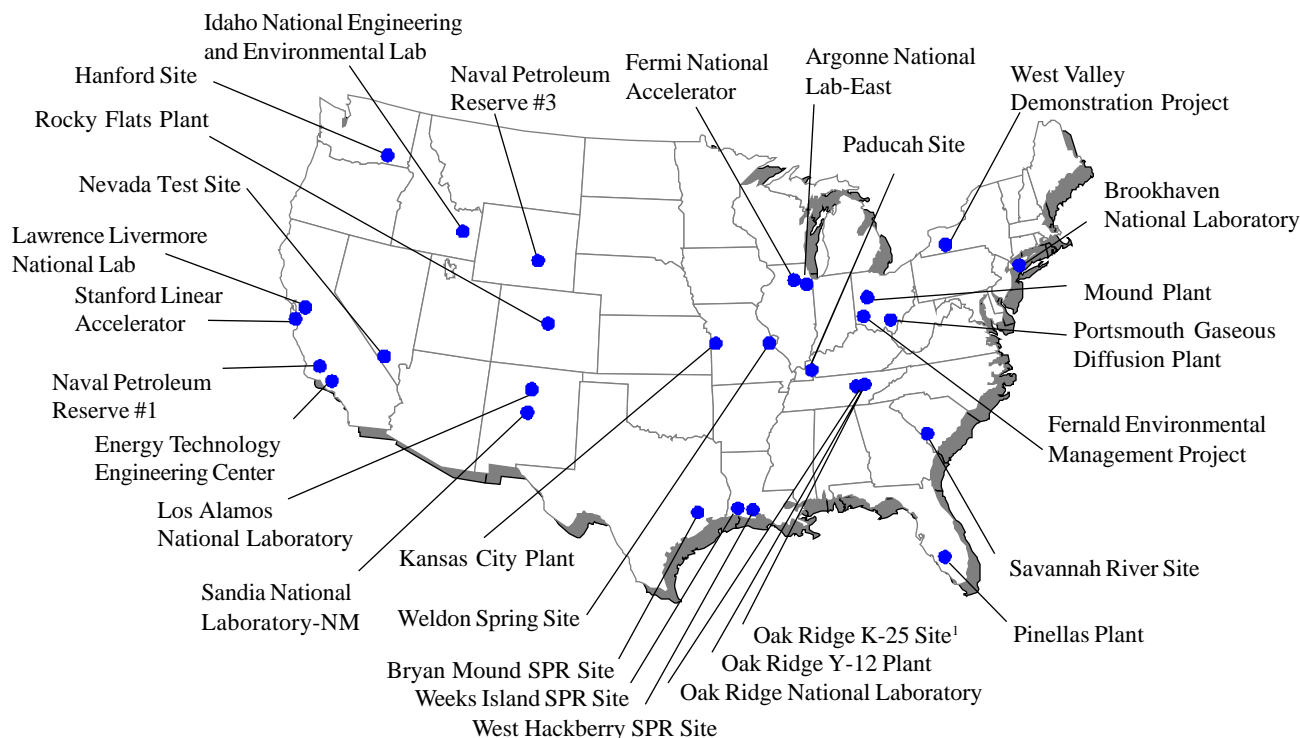
Under Section 3-302(d) of Executive Order 12856, every "covered facility" must prepare a facility-wide pollution prevention plan no later than the close of 1995. This plan shall describe how the site intends to help the Department meet the complex-wide 50% reduction goal by December 1999.

Prior to the issuance of the Executive Order, DOE guidance issued by the Deputy Secretary of Energy established that all DOE waste-generating sites were to prepare a waste minimization program plan and a pollution prevention awareness program plan in accordance with DOE Order 5400.1, *General Environmental Protection Program*. Although DOE Order 5400.1 was modified on September 30, 1995, the sections pertaining to the preparation, submission, and revision of these plans remain intact. Also, these two plans have been consolidated into one pollution prevention plan which integrates the pollution prevention activities of all the waste generating organizations at that site. Since DOE facilities that report under EPCRA Section 313 are also waste generators, the DOE pollution prevention plan

fulfills the requirement for a pollution prevention plan under Executive Order 12856.

To date, all of the sites (identified in Figure 3 below) that report under EPCRA Section 313 have prepared pollution prevention plans. Additionally, since DOE Order 5400.1 directs all DOE waste-generating facilities to prepare pollution prevention plans, numerous other DOE sites not reporting under EPCRA Section 313 also have plans in place. Site plans were last updated in 1997. In a February 17, 1997, memorandum, the Under Secretary encouraged sites to use the Code of Environmental Management Principles (CEMP), when developing their pollution prevention plans, as a means of accomplishing the Department's pollution prevention objectives. Copies of the CEMP Implementation Guide were distributed to assist the sites.

DOE sites must update these plans every three years with the next update due in 2000. Many DOE sites have the text portions of their plans available to the public through their Internet homepage.



¹Now known as the East Tennessee Technology Park (ETTP)

Figure 3. DOE Sites which reported under EPCRA Section 313 (TRI) for one or more of the 1993-1997 reporting years.

Acquisition & Procurement

Section 3-303 of Executive Order 12856 directs each agency to establish a plan and set goals for eliminating or reducing the unnecessary acquisition of products containing extremely hazardous substances (EHSs) and toxic chemicals and for voluntarily reducing the manufacture, process, and use of EHSs and toxic chemicals. DOE also is expected to review specifications and standards documents to identify opportunities to eliminate or reduce the use of EHSs and toxic chemicals.

To date, DOE has not yet developed specific numeric goals nor the plan called for under Section 3-303 of Executive Order 12856. However, these goals are inherent in each site's efforts to help DOE achieve the 50% reduction in the releases and transfers of toxic chemicals by December 31, 1999. For example, at Oak Ridge National Laboratory, acquisition of new lead for shielding purposes has been stopped. Instead, researchers must use internal sources of lead for their shielding needs. In addition to limiting the acquisition of new lead, the cost of using internal stocks of lead is below the purchase price of new lead.

As a significant purchaser of materials and equipment, DOE is committed to promoting the purchase of less toxic, more durable, more energy-efficient materials, including products composed of recovered materials, for its own operations. The Department is committed to ensuring the use of environmentally sound practices in the procurement process, including updating specifications, contracts, and policies. This will ensure that DOE and its contractors act according to existing federal, state, and local regulations and DOE Orders and policies. In addition to the requirements of Executive Order 12856, DOE has established programs to implement the requirements of Executive Order 12843, *Procurement Requirements and Policies for Ozone-Depleting Substances*, Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal*

Acquisition, and Executive Order 12902, *Energy Efficiency and Water Conservation at Federal Facilities*.

DOE programmatic offices and field facilities have continued to make strides in reducing the use of ozone-depleting substances (ODSs). In 1996, Headquarters Office of Defense Programs received a DOE pollution prevention award for its work in facilitating procurement of ozone-friendly, energy efficient chillers.



To make progress in meeting Executive Order 12843 and Clean Air Act requirements to maximize use of substitutes for ozone-depleting substances, Secretary Richardson established a Departmental goal in December 1998 to promote the phaseout of class I ozone-depleting substances--the class of chemicals most destructive to the stratospheric ozone layer. The goal is the replacement or conversion by 2005 of DOE chillers that are greater than 150 tons of cooling capacity and were manufactured before 1984, which is expected to remove from use 50 percent of class I refrigerants.

On September 14, 1998, Executive Order 12873, *Federal Acquisition, Recycling, and Waste Prevention* was amended by Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*. The new Executive Order (EO) directs all Federal Agencies to expand their efforts in recycling, waste prevention, and the purchasing of environmentally preferable products. Also, the Department issued its "Affirmative Procurement Program for Products Containing Recovered Materials Draft 1999 Guidance". This document continues the Department's aggressive affirmative procurement program by providing the necessary guidance to field sites regarding procurement goals and reporting requirements. Both EO 13101 and the Draft 1999 Guidance are available through DOE's EO 13101 website (<http://gerweb.bdm.com/cfdocs/aprs/>).

Effective May 1, 1996, the Environmental Protection Agency added 19 new items containing recovered materials to the original five items. In addition, EPA has designated an additional 12 new items containing recovered materials to the Federal affirmative procurement program which became effective on November 13, 1998. A final ruling was issued in the *Federal Register* on November 13, 1997. On August 26, 1998, EPA proposed to designate an additional 19 items that are or can be made with recovered materials. This proposed rule would bring the total of EPA-designated items to 55.

The Department's affirmative

procurement goal is to increase



procurement of EPA-designated recycled products to 100 percent by FY 1999, except where they are not commercially available competitively at a reasonable price or do not meet performance

standards. The percentage of EPA-designated items containing recovered materials purchased by DOE has increased from 29 percent in FY 1992 to 85 percent in FY 1998 (see Figure 4 below). In FY 1998, DOE purchased approximately \$31.7 million worth of EPA-designated items, of which about \$21.3 million contained recovered materials. For more detailed information, see DOE's RCRA Report for FY 1998 on DOE's EO 13101 website (http://gerweb.bdm.cfdocs/aprs/Exec_sum.htm).

DOE sites do their reporting on the Internet. The DOE reporting software is available for use by other agencies.

Many DOE sites are working to make the procurement of environmentally preferable products easier. For example, staff at the Oak Ridge National Lab can access their homepage and get descriptions about the recycled content of products available to them through the Accelerated Vendor Inventory Delivery System.

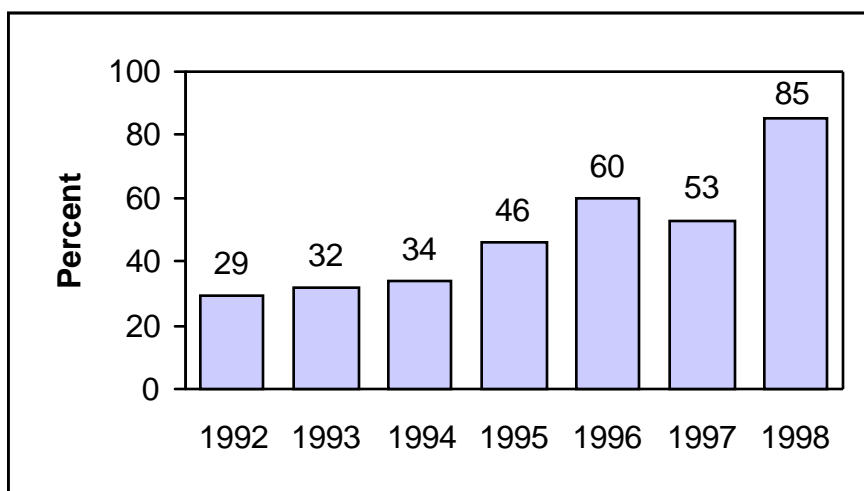


Figure 4. Percent of DOE Purchases of EPA-Designated Items Containing Recovered Materials

Pollution Prevention Technology

Technologies developed with industry and other federal agencies are applied to DOE operations and facilities.

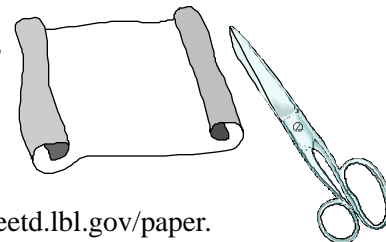
Executive Order 12856 encourages agencies to develop and test innovative pollution prevention technologies and to develop partnerships with industry to assess and deploy such technologies. Work with external partners is beneficial to DOE's internal pollution prevention programs as technologies developed with industry and other federal agencies are applied to DOE operations and facilities. External partnerships also promote information exchange within and outside of DOE.

DOE has a long history of successful partnerships with the private sector and academia, particularly through its applied research programs. These partnerships take many forms; for example, they can be relatively simple technical assistance arrangements with small businesses or agreements involving collaborative technology development. Selected examples of DOE pollution prevention technology projects follow. These few examples do not fully represent the broad scope of pollution prevention technology being developed at DOE internally.

At the Rocky Flats Environmental Technology site, located in Golden, CO, radioactively contaminated scrap metal was shipped to Oak Ridge, Tennessee, for melt-down and reuse as shield blocks. This recycle/reuse activity reduced cleanup/stabilization low-level waste by about 435 cubic meters for a reported cost savings of \$115,200.

Lawrence Berkeley National Laboratory, located in Berkeley, CA, and DOE are working together with the City of Berkeley and the County of Alameda to reduce the environmental impacts of building construction and operations by using straw-bale. The benefits of using straw-bale include: superinsulated walls, low costs, simple construction, and reuse of an agricultural by-product into valuable building material.

Lawrence Berkeley National Laboratory (LBNL) has created a website titled "Cutting Paper". The website, funded by DOE's Office of Pollution Prevention, provides energy managers and office workers with practical information on understanding and reducing office paper use. EPA's Energy Star™ Office Equipment Program and the Laboratory's Waste Minimization and Generation Assistance Program funded LBNL researchers to collect the data about paper use and efficiency strategies. The website is at <http://eetd.lbl.gov/paper>.



DOE's Lawrence Livermore National Laboratory, located in Livermore, CA, has been working to develop an alternative approach to the manufacturing of printed wiring boards which will offer significant environmental and cost savings over current methods. The Laboratory's goal is to selectively etch certain parts of a printed wiring board at reduced rates which will eliminate the need for applying a tin/lead etch-resistant coating. Subsequently, the generation of lead-bearing wastes will be reduced. Thus far, the Laboratory has created four electrodeposition cells which allow rapid variation in copper plating parameters (i.e., composition and temperature) that are believed to affect the etch rate.

Through DOE's Return-on-Investment (ROI) Program, DOE's Stanford Linear Accelerator Center, located in Menlo Park, CA, has designed and tested new methods to collect recyclable materials such as mixed paper and beverage containers. A pilot project was initiated to determine if money could be saved by reducing the recycling subcontractor's labor costs. The project involved key factors such as changing the janitorial services and redefining the subcontractor's services. Now, the janitorial personnel are responsible for loading the recyclables onto the subcontractor's truck thus reducing the cost paid to the subcontractor.

The Liquid Storage Facility at Oak Ridge Y-12 Plant, located in Oak Ridge, TN, tested acrylic resin-bonded graded density cartridge filters as a substitute for cotton string-wound cartridge filters. The tests indicated that the acrylic filters lasted longer than cotton filters. Thus, this substitution resulted in significant cost savings and a reduction in the routine operations low-level mixed waste.

An underground storage tank was inherited by Pacific Northwest National Laboratory from a previous owner of one of its buildings. The tanks were contaminated with small amounts of radioactive material and metals. Instead of disposing the tanks as waste, the tanks were recycled as radioactive scrap metal and made into radiation shielding blocks by a vendor, for use at the Los Alamos National Laboratory.

The *Pollution Prevention by Design* project was developed by DOE's Office of Pollution Prevention to provide an integrated set of tools to assist engineers, designers, and planners in incorporating pollution prevention (P2) strategies into the design stage of new products, processes, and facilities. The project was a collaborative effort among DOE sites and contractors. The P2-Edge software is available from P2 by Design to enable designers and engineers to examine a number of opportunities for pollution prevention in design stages. Further information is available on-line at <http://terrassa.pnl.gov:2080/DFE/>.

DOE's Argonne National Laboratory, located in Argonne Illinois, developed a new material to solidify radioactive and hazardous waste for safe disposal. The new material known as Ceramicrete sets harder than concrete and binds quickly to almost

anything. Ceramicrete is made by mixing together metal oxides and soluble phosphate powders. The ingredients are abundant in nature and react quickly at room temperature to form a ceramic. When the reaction occurs, the ingredients form a thick slurry that is poured into storage drums, where it sets to form a hard, dense and nonleachable ceramic waste form. Ceramicrete is effective in solidifying various waste streams such as ash from municipal solid waste incinerators, nuclear power plants, and hazardous waste incinerators.



Scientists at DOE's Los Alamos National Laboratory, located in New Mexico, are developing new applications for a technology known as Polymer Filtration. The technology is capable of removing toxic metal contaminants, such as lead from the acid mine drainage and recovers the economically valuable metals, such as silver, copper and zinc. In conventional remediation processes, these metals are typically lost.



The Pantex Plant, located in Amarillo, TX, and the Sandia National Lab, located in Albuquerque, NM, are the project leaders for the DOE Center of Excellence for Solvent Substitution Testing. Several DOE sites have participated as key consultants, such as the Los Alamos National Lab and the Lawrence Livermore National Lab. The goal of the testing is to eliminate all ozone-depleting chemicals and hazardous and mixed waste streams for nuclear maintenance, refurbishment, and dismantlement activities within DOE and DoD.

Pollution Prevention Funding

Section 4-404 of E.O. 12856 directs Agencies to place a "high priority on obtaining funding and resources needed for implementing" the Executive Order. Prior to fiscal year (FY) 1994, pollution prevention funding at most DOE site's came from overhead accounts and could not be tracked directly as funding for pollution prevention. Currently, DOE sites are required to record budgets on activity data sheets (ADSs) by Departmental program - the ADSs are then compiled by Headquarters (HQ) to develop the Department's five-year budget. Implementation funds are derived largely from site budgets and generator set-aside fees (GSAF).

Beginning with the fiscal year 1997 budget cycle, pollution prevention was elevated to the status of a "national program" within the Office of Environmental Management (EM). During the budget process, the individual site P2 budgets are consolidated into one "National Program" budget item that can be defended at the Headquarters level and not compete with mission activities in site budgets. Once a budget is secured, EM allocates the money back to the field based on the waste reduction potential of each site.

The High Return on Investment (HROI) program was initiated as a pilot program by the DOE Pollution Prevention Executive Board in 1994. On September 8, 1998, the Acting Assistant Secretary for the Office of Environmental Management, distributed the results of the return-on-investment projects funded by the field from 1994 to 1998. The results were an estimated life-cycle savings of \$311 million from a total of 262 projects with an implementation cost of \$19 million.

Beginning in 1996, HQ involvement in HROI projects was phased out and Operations/Field Offices and sites were to implement their own version of the program. HROI projects are developed and funded by site budgets or GSAF, based on site needs. At the end of Fiscal Year 1999, Headquarters funding for return-on-investment projects will be suspended.

Table 7 shows total DOE pollution prevention budgets directly recorded on the ADSs and discretionary funds.

■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Beginning in 1996,
Operations/Field
Offices and sites
were to implement
their own version of
the ROI program.
■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Table 7: Total DOE Dedicated Pollution Prevention Budget Requests for FY 98 & 99 (\$Millions)

DOE Program	FY 1998		FY 1999	
	Direct Funded* (dedicated)	ES&H Plan** (discretionary)	Direct Funded* (dedicated)	ES&H Plan** (discretionary)
Environmental Management	22.5	0	12.32	0
Defense Programs	0	22.808	0	11.305
Energy Research	0	4.404	0	4.212
Fossil Energy	0	.684	0	.520
Other	0	.083	0	.078
TOTAL	22.5	27.979	12.32	16.115

* Dedicated funds identified by separate B&R codes and ADS; funds directly under the control of DOE Operations Office Waste Minimization Coordinators. EM reported their data to the Office of Environment, Safety, & Health.

** All ES&H costs were generated from FY 2000 DOE Environmental Safety and Health Annual Report. They represent funded Pollution Prevention activities identified in the FY 2000 Congressional Budget Request.

Other E.O. 12856 Responsibilities

In addition to the Executive Order provisions previously discussed, the following paragraphs address the remaining Executive Order 12856 requirements.

First, Section 5-501 of the Executive Order directed DOE to submit a preliminary list of facilities that would potentially meet the requirements for reporting under EPCRA by December 31, 1993. DOE submitted its final list of sites to EPA in April 1994. DOE identified 71 sites as potentially meeting any or all of EPCRA Sections 302-303, 311-312, and 313. The Department's list did not include those sites which potentially may report solely under EPCRA Section 304.

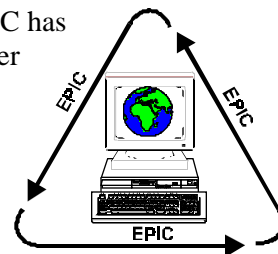
Section 4-405 of the Executive Order 12856 instructs the Administrator to establish a "Federal Government Environmental Challenge Program". The program is geared towards recognizing and rewarding those Federal agencies and facilities with outstanding environmental management performance.

In an October 21, 1996, letter to EPA's Assistant Administrator for Enforcement, DOE endorsed EPA's Code of Environmental Management Principles (CEMP). The principles emphasize pollution prevention, sustainable development, and key elements for a state-of-the-art environmental management program. The Department has published an Information Brief entitled, *Environmental Management Systems: Code of Environmental Management Principles (CEMP)*, that discusses DOE's implementation of the CEMP. In a November 24, 1997, follow-up letter to EPA, DOE discussed how the principles of the CEMP will fit into implementation of the Department's Integrated Safety Management System (ISMS). The ISMS will help to ensure the full integration of environment, safety and health considerations into work planning and execution. Both DOE and EPA recognize that the CEMP is compatible with other environmental management system (EMS) initiatives now underway, including DOE's performance-based contracting incentives to

use an environmental management system consistent with ISO 14001. Another Information Brief, *Environmental Management Systems: Institutionalizing Pollution Prevention*, discusses how an EMS can institutionalize and extend DOE's approach to pollution prevention across activities, programs, and facilities. Both documents are available on OEPA's website at <http://tis.eh.doe.gov/oeпа/>.

Executive Order 12856 Section 5-508 directs agencies to grant the public "ready access to all strategies, plans, and reports required to be prepared...under this order." In addition to site resources, including site advisory boards and public reading rooms, the Department also has two on-line sources for accessing DOE pollution prevention information.

The Department has an on-line pollution prevention information clearinghouse called EPIC. EPIC is available to both public and DOE users via the Internet on the world-wide-web (<http://epic.er.doe.gov/epic>). EPIC has been redesigned to eliminate public user logins, increase server response, and provide upgraded search capabilities. Through EPIC, users can access a wide range of DOE documents, including, but not limited to: the DOE Pollution Prevention (P2) Strategy, DOE policy and guidance, DOE site project descriptions and accomplishments, pollution prevention opportunity assessments.



A second source for DOE pollution prevention information is the Office of Environmental Policy and Assistance's website at <http://tis.eh.doe.gov/oeпа/>. Through this website, users can access the complete text of environmental laws, *Federal Register* notices, environmental data and reports, Environmental Guidance Documents and information on training and DOE compliance. Specifically, under "Environmental Data and Reports", users will find a section titled "Compliance Reporting Requirements". Under this section, users can currently access the TRI data reported by DOE sites from 1988 to 1997 and reports, including DOE's Executive Order 12856 Annual Reports and the DOE 33/50 Program Update Report.

P2 Initiatives: Awards, Workshops, Guidance

In addition to the requirements of Executive Order 12856, DOE has conducted a number of other pollution prevention initiatives, including workshops, training sessions, conferences, awards programs, and the development of internal guidance. The following paragraphs highlight only a few of the pollution prevention initiatives undertaken by DOE.



Beginning in 1994, the Department has annually honored the work performed by DOE and contractor employees in preventing waste and pollution. The *DOE Pollution Prevention Awards Program* was designed to meet DOE pollution prevention incentive and technology transfer goals.

For the 1999 DOE Pollution Prevention Awards Program, a total of 59 nominations were submitted from across the DOE complex. One nomination was chosen for the National Award in each of the 11 Pollution Prevention Award categories. The Public Outreach and Partnership category had 2 nominations selected for the award. The award categories were: Public Outreach and Partnership, Environmental Preferability, Waste Prevention, Sowing the Seeds for Change, Model Facility Demonstration, Recycling, Affirmative Procurement, Environmental Restoration, Information Sharing, Integrated Planning and Design, and Complex-wide Achievement. Some of the awards are described below:

Public Outreach and Partnership. The Hanford Site in Richland, Washington, has participated in various projects to educate the local community on environmental issues. The annual Earth Day Community Event and the National Pollution Prevention Week are two projects the Hanford Pollution Prevention Group participates in to educate the communities on opportunities for pollution prevention and waste reduction.

DOE-Albuquerque helped sponsor a state-wide essay contest on recycling for New Mexico high school students. As a result, many schools incorporated recycling and its associated benefits into their school curriculum.

Environmental Preferability. The Sandia National Laboratories (SNL) in Albuquerque, New Mexico received an award for partnering

with the University of Northern Iowa in a field test of using soy-bean based hydraulic fluid as an alternative to the standard petroleum-based fluid. SNL tested the soy-bean based hydraulic fluid in 20 of their Fleet Service vehicles. The pilot program was successful and SNL is using the new hydraulic fluid in all of its hydraulic equipment.

Waste Prevention. Since 1996, the Pantex Plant, in Amarillo, Texas, has routinely recycled concrete and asphalt generated from construction and maintenance projects. In 1998, the Pantex Plant's net savings from recycling and reusing the asphalt and concrete were \$108,496. Pantex's efforts will eliminate planned use of about 1,800 cubic yards of landfill space annually, depending on the number and type of construction projects undertaken.

Sowing the Seeds for Change. The Pantex Plant's Pollution Prevention Team works with area businesses and community organizations to promote pollution prevention opportunities throughout the community. For example, the team has focused its efforts on educating students in area schools about the importance of reducing waste generation.

Model Facility Demonstration. Pantex instituted a waste reduction culture where everyone now considers waste reduction part of their job. Most successful waste reductions have been accomplished through source reduction. Much of what cannot be reduced at the source is recycled in numerous recycling programs. The lessons learned at Pantex are shared with others through an extensive outreach program that includes partnering with local industries and teaching local school children about the importance of pollution prevention. This program could be used as a model for all government facilities.

Recycling. In 1998, the Argonne National Laboratory-East in Illinois, reduced the generation of sanitary waste from routine operations by over 50%, surpassing the 1999 DOE Pollution Prevention Goals for sanitary waste. Argonne continues to assess, improve, and expand these programs to achieve continuous improvement.

Affirmative Procurement. To meet the affirmative procurement challenge, a team comprised of Headquarters and field organizations was developed and led by Susan Weber from the Office of Pollution Prevention, EM-77. This team has instituted innovative concepts such as quarterly complex-wide teleconferences on affirmative procurement issues with frequently asked questions and answers posted on the EO 13101 webpage. The team's resolution of multiple problems can be used by any Federal agency or any other large organization. The team's efforts have contributed directly to meeting the Affirmative Procurement goal.

Environmental Restoration. The DOE Oak Ridge Operations in Tennessee, has successfully incorporated pollution prevention techniques throughout the decontamination and decommissioning activities at its Old Hydrofracture Facility Project. By integrating pre-planning in the project execution, a minimum of waste was generated and maximum commercial recycling opportunities were used. These efforts saved approximately half a million dollars.

Information Sharing. The Oak Ridge Reservation (ORR) in Tennessee, received an award for developing a Pollution Prevention Information Management System to track and report pollution prevention progress. The system covers air, water, and solid waste emissions and releases, and is a central repository for information related to pollution prevention activities and initiatives at ORR.

Integrated Planning and Design. To reduce low-level radioactive waste volume and associated costs, the H-Canyon Enhanced Work Planning (EWP) team was formed to evaluate the existing waste generation and handling practices at the Savannah River Site's H-Canyon Facility, located in South Carolina. The EWP process evaluates and improves the system used to manage how work is planned and executed. It also serves as a cornerstone for implementing Integrated Safety Management at the task level.

Complex-wide Achievement. The Savannah River Site (SRS) took the initiative and established an objective to build Pollution

Prevention by Design (P2D) into site design manuals and procedures. A DOE complex-wide P2D team, led by SRS, has made remarkable progress toward institutionalizing incorporation of pollution prevention considerations into the design of DOE facilities.

For the 1999 *White House Closing the Circle Awards Program*, DOE won three of the fifteen civilian agency awards. One of the awards went to Ms. Susan Weber, of DOE's Office of Environmental Management, for creating an effective coordination, outreach, education, and reporting program to encourage the purchase of materials with recycled content at DOE sites. Dr. Kent Hancock, also of DOE's Office of Environmental Management, received an award for establishing a waste reduction path that included planning, infrastructure, implementation, information, and measurement. The third award went to Anna Beard and her affirmative procurement team at the Richland Operations Office for developing an Affirmative Procurement Strategy for meeting the goal of 100% purchases of EPA-designated products.



DOE's Oakland Operations Office in California, founded the first DOE/OAK Pollution Prevention Awards Ceremony on Earth Day 1999. Every three years, the Office plans to recognize individuals and teams for outstanding efforts in waste reduction and environmental stewardships at the California DOE sites.

In October 1998, DOE's Argonne National Laboratory received a Certificate of Recognition at the 12th Annual State of Illinois Governor's Pollution Prevention Awards Ceremony. ANL was recognized for their significant waste minimization and pollution prevention achievements. This is the second highest award given to Illinois Organizations for outstanding achievements in pollution prevention.

On November 15-19, 1999, DOE, Sandia National Laboratories, Los Alamos National Laboratory, and the Waste-management Education and Research Consortium will sponsor the annual DOE Pollution Prevention Conference '99. The conference will be held in the Albuquerque

P2 Initiatives (Continued)

Convention Center in Albuquerque, NM. The focus of the conference will be on "moving toward a pollution-free DOE". The five day conference will consist of workshops, discussion groups, oral presentations, and poster sessions. There will also be networked computers for participants to record their considerations and conclusions. A report will be published summarizing the discussions, recommendations, and results of the conference. More information is available on the web at <http://p2.sandia.gov/>.

DOE's Office of Defense Programs (DP) and Lawrence Berkeley National Laboratory co-sponsored the Fourteenth Biannual Pollution Prevention Technology Workshop in San Jose, CA on November 18-20, 1998. The theme of the workshop was "The Art of Sustainable Development as Practiced by the Leaders of the Silicon Valley." The fifteenth biannual workshop was held in Albuquerque, NM on May 17-20, 1999. The theme of the workshop was "From the Land of Enchantment- A Vision for Tomorrow". The pollution prevention workshops included time for attendees to compare and exchange ideas on the success of pollution prevention programs.

Pollution Prevention Opportunity Assessment training is offered at the DOE National Environmental Training Office (NETO) located at the Savannah River Site. The course introduces students to practical applications of storage and disposal activities through examples and exercises of the use of flow diagrams, waste stream data analysis assessment of data and measurements and screening. Students learn methods to prioritized options and determine economic feasibility in decision making about pollution prevention and energy conservation opportunities. For course listings and scheduling, see NETO's website at <http://www.em.doe.gov/neto>.

Training on Emergency Planning and Community Right-to-Know Act (EPCRA) is also offered at NETO. This course prepares site personnel who must report releases of toxic chemicals or extremely hazardous substances from DOE facilities; prepare the EPCRA Section 311 and 312 chemical inventories and prepare the EPCRA 313 toxic release inventory.

Exercises based on a model DOE facility are used in addition to lectures and discussions. For more information, see NETO's website.

DOE's Office of Environmental Policy and Assistance has a tutorial website on the Emergency Planning and Community Right-to-Know Act (EPCRA). The site is designed to walk individuals through the steps of various EPCRA sections including section 313, Toxic Chemical Release Inventory. The website is at <http://tis.eh.doe.gov/oeпа/EPCRA>.

The East Tennessee Technology Park developed an innovative pollution prevention training video. This video is used to train employees in pollution prevention practices by illustrating recycling and technology transfer techniques.

In March 1999, DOE's Office of Environmental Policy & Assistance issued an Environmental Guidance Technical Assistance Project on "Emergency Planning and Community Right-to-Know Act Section 313 Toxic Release Inventory Reporting- Questions and Answers Update". This Q&A guidance addresses specific questions posed by DOE Field Elements regarding section 313 reporting. This Q&A guidance and the one issued in September 1997 are available through the OEPA website (<http://tis.eh.doe.gov/oeпа>).

In January 1999, the Lawrence Livermore National Laboratory, published a report titled, "1997 Comprehensive Opportunity Assessment for Pollution Prevention at LLNL". The report summarizes sources of the top 20 waste streams, and suggests pollution prevention methods and opportunities that can be applied to these waste streams.

In December 1998, DOE reached a settlement with the Natural Resource Defense Council, Inc. to develop, operate, and maintain an Internet database of information to enable public participation in the cleanup process at DOE sites. TRI data presented in this Annual Report will be extracted and included in this new database. The database is expected to be available via the Internet in early 2000.

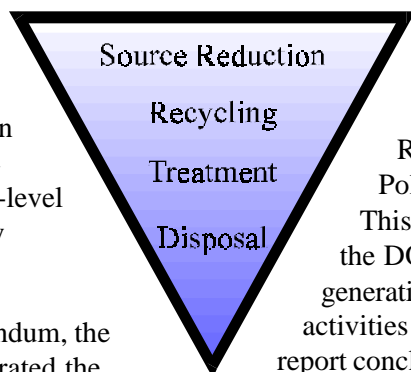


P2 Initiatives: Waste Reduction

Compared to other sources of DOE waste, the generation of toxic chemical releases and transfers at DOE facilities represents a small portion of the Department's total annual waste generation. Since DOE's pollution prevention strategy is to "reduce the generation of all waste streams", many of the Department's pollution prevention efforts, including the allocation of funds for pollution prevention, have been focused more on reducing the generation of radioactive, low-level mixed, hazardous and sanitary wastes.

In a May 3, 1996 memorandum, the Secretary of Energy demonstrated the Department's commitment to pollution prevention by establishing goals for routine operations, all operations, and affirmative procurement (See Table 8 and Appendix A). These goals were developed in accordance with recent Executive Orders and internal departmental guidance. Similar to the TRI

goal established in accordance with E.O. 12856, these goals are to be achieved by December 31, 1999 and will be measured annually against a 1993 baseline. DOE field sites are to set site-specific goals in their P2 plans to assist in achieving the departmental goals.



In September 1999, DOE's Office of Environmental Management released the 1998 Annual Report of Waste Generation and Pollution Prevention Progress. This report presents and analyzes the DOE complex-wide waste generation and pollution prevention activities at each reporting site. The report concluded that routine operations waste generation (excluding sanitary waste and wastewater) decreased 16% from 1997 to 1998 and decreased 67% overall from 1993 to 1998 (excluding sanitary waste). The report can be located on DOE's Office of Pollution Prevention's website (<http://twilight.saic.com/wastemin/>).

Table 8: DOE Source Reduction and Recycling Performance, Compared to 1993¹

Goal	1993 Baseline	1998 % Reduction ²	Dec. 31, 1999 Goal
Reduce the total releases and off-site transfers for treatment and disposal of toxic chemicals	4.68 million pounds	80%	50%
Reduce the generation of radioactive waste*	37,392 cubic meters	67%	50%
Reduce the generation of low-level mixed waste	3,524 cubic meters	64%	50%
Reduce the generation of hazardous waste	7,921 metric tons**	83%	50%
Reduce the generation of sanitary waste	122,966 metric tons	65%	33%
Divert sanitary waste for recycling	***	55%****	33%
Affirmative procurement of EPA-designated recycled products	***	85%	100%

¹ U.S. Department of Energy Pollution Prevention Program Plan (DOE/S-0118)

² 1998 Annual Report of Waste Generation and Pollution Prevention Progress Report, (DOE/EM-0464, 1998)

* Represents low-level waste only.

** Includes RCRA-regulated, state-regulated and TSCA-regulated wastes.

***Recycling and affirmative procurement baselines are established annually.

****Does not include the "one-time" recycling of 24,601 metric tons of soil at Lawrence Livermore Nat'l Lab, 624 metric tons of soil from the Kansas City Plant, 397 metric tons of soil from Lawrence Berkeley Nat'l Lab, and 53,357 tons of recycled aggregate at the Weldon Spring Site.



Appendix A

Secretary of Energy
Memorandum
May 3, 1996

The Secretary of Energy

Washington, DC 20585

May 3, 1996

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS**FROM: HAZEL R. O'LEARY****SUBJECT: Departmental Pollution Prevention Goals**

The Department of Energy pollution prevention strategy is to reduce the generation of all waste streams and thus minimize the impact of departmental operations on the environment. Preventing pollution also reduces risks to the health and safety of workers and the general public and saves scarce budget dollars. To demonstrate the Department's commitment to pollution prevention, we have set the following goals to be achieved by December 31, 1999, using calendar year 1993 as a baseline year.

For Routine Operations:

- Reduce by 50 percent the generation of radioactive waste.
- Reduce by 50 percent the generation of low-level mixed waste.
- Reduce by 50 percent the generation of hazardous waste.
- Reduce by 33 percent the generation of sanitary waste.
- Reduce by 50 percent total releases and off-site transfers for treatment and disposal of toxic chemicals.

For All Operations, Including Cleanup/Stabilization Activities:

- Recycle 33 percent of sanitary waste.

For Affirmative Procurement:

- Increase procurement of Environmental Protection Agency-designated, recycled products to 100 percent, except where they are not commercially available competitively at a reasonable price or do not meet performance standards.

Operations Offices will direct sites under their purview to set site-specific goals to assist in achieving the departmental goals. Progress toward meeting the departmental goals will be reported annually to me. It is the responsibility of each Federal and contractor manager to work diligently to meet these goals; to aggressively seek ways to reduce the amount of pollutants generated within the workplace; and to conserve, reuse, and recycle resources.

Department of Energy
Pollution Prevention
Strategy

Appendix B

UNITED STATES DEPARTMENT OF ENERGY POLLUTION PREVENTION STRATEGY

POLICY STATEMENT:

"The Department of Energy (DOE) embraces pollution prevention as its strategy to reduce the generation of all waste streams and thus minimize the impact of departmental operations on the environment, as well as improving safety of operations and energy efficiencies. I expect the Department to continue the leadership shown by our voluntary compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA) and our participation in the Environmental Protection Agency's 33/50 program which focuses on near-term pollution prevention efforts of 17 priority toxic chemicals."

"Recognizing that pollution prevention is the Department's preferred approach to meeting its environmental responsibilities, I am directing that Cognizant Secretarial Offices, working in conjunction with the Pollution Prevention Executive Board, identify, plan, and allocate funds for field implementation of waste minimization and pollution prevention activities during the departmental budget review process. This information will be used to provide an identified budget each year dedicated to pollution prevention activities." -- Secretary Hazel R. O'Leary, 12/28/93

RESPONSIBLE INDIVIDUAL:

DOE is committed to ensuring the success of its pollution prevention goals. Because of this commitment, the Department has designated Deputy Secretary of Energy William H. White as the senior manager responsible for coordination of the Department's efforts in pollution prevention. Mr. White may designate another individual to act on his behalf should the need arise.

BACKGROUND:

The Department of Energy has had a longstanding commitment to implementing the principles contained in Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements." DOE facilities have been active in complying with EPCRA since its passage in 1986. The Department has provided guidance and training materials on the general requirements of EPCRA, and specific guidance and training on Toxics Release Inventory (TRI) reporting. In fact, the Department has led the Federal sector in TRI reporting by voluntarily committing to report TRI releases prior to the issuance of the Executive Order, and has worked closely with EPA during 1992 and 1993 on resolving issues of Federal facility TRI reporting.

The Department has also been a leader in the development and implementation of pollution prevention programs and activities, including voluntary participation in EPA's 33/50 program. In 1988, 12 DOE facilities filed Form R reports with EPA as sites which used or stored chemicals to be reported under TRI. Since then, DOE facilities have met, ahead of schedule, the Department's goal of a 50 percent reduction in TRI releases and transfers of the seventeen priority toxic chemicals covered by the EPA 33/50 program. In addition, facility-specific pollution prevention plans are required under DOE Order 5400.1, General Environmental Protection Program, and the Department has issued guidance to its facilities on the preparation of those plans. DOE has actively involved nearly all Departmental organizations in pollution prevention activities at the staff level through the Waste Reduction Steering Committee, and at the senior management level through the Pollution Prevention Executive Board, chaired by the Deputy Secretary of Energy.

The combined effort of these groups produced the *Department's 1994 Waste Minimization/Pollution Prevention Crosscut Plan*, as well as a program to identify and implement pollution prevention projects which can produce successful results in the near-term. In addition, the Department has established a pollution prevention funding mechanism through the Department-wide Environment, Safety and Health Management Plan. This will ensure that pollution prevention programs are funded that reduce toxic emissions and waste generation in a cost effective manner.

Every effort has been, and will continue to be, made to involve the public and other stakeholders in monitoring the Department's progress in meeting the requirements of Executive Order 12856.

The attached bibliography details past Departmental efforts to implement pollution prevention through Secretarial memoranda, guidance documents, and planning documents. The objectives and goals which follow build upon the previous efforts and upon the Department's other pollution prevention successes to date.

OBJECTIVE 1. EFFECTIVELY INSTITUTIONALIZE THE POLLUTION PREVENTION ETHIC THROUGH TRAINING AND AWARENESS IN ALL MISSION AREAS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 1.1 Develop an environmentally aware DOE community through education and training in pollution prevention so that all personnel understand the DOE commitment to utilize pollution prevention through source reduction, where practicable, as the primary means of achieving and maintaining compliance with all applicable Federal, State, and local environmental regulations.

- Equip our work force with the pollution prevention skills to accomplish DOE's missions while protecting the environment.
- Institutionalize and continually improve appropriate pollution prevention training for our personnel.
- Integrate pollution prevention measures into all operations.

Sub-objective 1.2 Promote pollution prevention through multimedia outreach/awareness programs and partnerships.

- Strengthen working relationships with regulators at all levels.
- Foster partnerships with stakeholders and industry by:
 - participating in local community emergency planning;
 - enhancing the coordination and effectiveness of local emergency response capabilities;
 - providing communities with information on toxic chemical use and release by reporting under TRI;
 - promoting the elimination of the use of hazardous substances, a reduction in toxic emissions, and a reduction in the generation of hazardous waste and DOE facilities; and
 - encouraging affirmative procurement of non hazardous chemicals and materials and products with recycled content, and the reuse and recycling of materials when possible.
- Demonstrate innovative leadership in and commitment to pollution prevention.
- Disseminate information on pollution prevention technologies throughout the DOE complex.
- Work with other Federal agencies on information exchange.

Sub-objective 1.3 Encourage and recognize outstanding pollution prevention efforts through existing and new awards/incentive programs.

Appendix B

OBJECTIVE 2: REDUCE RELEASES AND OFF-SITE TRANSFERS OF TOXIC CHEMICALS TO THE ENVIRONMENT

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 2.1 Minimize releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals. To the maximum extent possible, such reductions shall be achieved through source reduction.

GOAL: By December 31, 1999, achieve a Department-wide 50 percent reduction of total releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals from the baseline year (DOE will determine the baseline year after further study).

Sub-objective 2.2 Establish site-specific goals to reduce the generation and use of radioactive and other hazardous materials to the extent practicable.

Sub-objective 2.3 Develop, maintain, and implement pollution prevention plans at each major facility. These plans may include baselines, pollution prevention opportunity assessments, and investment strategies.

Sub-objective 2.4 Implement cost-effective pollution prevention at all DOE facilities.

Sub-objective 2.5 Submit annual reports to the EPA Administrator regarding progress made toward achievement of the above goal, as well as progress made in complying with all other aspects of Executive Order 12856.

OBJECTIVE 3: INCORPORATE POLLUTION PREVENTION POLICY INTO THE ACQUISITION PROCESS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 3.1 Integrate environmental considerations into acquisition strategies, plans, and the source selection process. Employ life cycle analyses and total cost accounting principles in procurements, as appropriate.

GOALS:

1. Establish a Department-wide plan, with goals, to eliminate or reduce unnecessary acquisitions of hazardous substances or toxic chemicals.
2. Establish a Department-wide plan, with goals, to reduce DOE manufacture, process, and use of extremely hazardous substances and toxic chemicals.

Sub-objective 3.2 Integrate pollution prevention considerations when developing mission needs and when developing and revising acquisition documentation.

GOAL: By August 3, 1995, review DOE standards and specifications to identify opportunities to eliminate or reduce unnecessary acquisitions of hazardous or toxic substances, and complete all necessary revisions by December 31, 1998.

OBJECTIVE 4: ACHIEVE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW REPORTING

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 4.1 Develop and maintain a comprehensive inventory of toxic chemicals, extremely hazardous substances, and hazardous chemicals at each DOE facility.

Sub-objective 4.2 Ensure that each facility fulfills all EPCRA reporting responsibilities, including:

- Emergency planning notification.
- All other information needed for local emergency planning.
- Chemical inventory information to local emergency planning committees.
- Emergency notification to local emergency response teams.
- TRI reporting.

OBJECTIVE 5: ADDRESS OTHER ENVIRONMENTAL QUALITY ISSUES AND POLLUTION PREVENTION FOCUS AREAS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 5.1 Address the requirements of Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” signed by the President on February 11, 1994. This Executive Order focuses on achieving environmental justice by promoting non-discrimination in DOE’s programs that affect human health and the environment.

Sub-objective 5.2 Promote water conservation, energy efficiency, and use of renewable energy technologies, as required by Executive Order 12902, “Energy Efficiency and Water Conservation at Federal Facilities.”

- Minimize life cycle costs by utilizing energy efficiency, water conservation, and renewable energy resources in the design and construction of new facilities, as well as in the modification of existing facilities.

GOALS: 1. By December 31, 2004, achieve a 30 percent Department-wide reduction in energy consumption from the 1985 baseline.

2. By December 31, 2004, increase Department-wide energy efficiency by at least 20 percent from the 1990 baseline.

Sub-objective 5.3 Optimize the use of environmentally preferable materials in the planning, construction, and maintenance of facilities. Establish and promote efficient material/energy-use practices through conservation, reutilization, materials substitution, recycling, affirmative procurement, and the creation of markets for recycled materials, as required by Executive Order 12873, “Federal Acquisition, Recycling, and Waste Prevention.”

Sub-objective 5.4 Incorporate pollution prevention principles, techniques, and mechanisms into all planning and decision making processes. Evaluate and report those efforts in documentation required by the National Environmental Policy Act.

OBJECTIVE 6: DEVELOP, TRANSITION, AND APPLY INNOVATIVE POLLUTION PREVENTION TECHNOLOGIES

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 6.1 Develop and support a DOE Strategic Plan to identify and prioritize research, development, demonstration, testing, and evaluation (RDDT&E) needs.

- Focus pollution prevention RDDT&E on developing and implementing critical technologies needed for source reduction.
- Encourage user participation in formulating requirements.

Sub-objective 6.2 Identify and fund high priority RDDT&E programs.

- Identify, develop, and implement a RDDT&E plan.

Sub-objective 6.3 Coordinate DOE’s pollution prevention RDDT&E programs with those of other Federal agencies, academia, and private industry.

- Identify material and process substitutes in DOE technologies that have government-wide as well as commercial application for expedited implementation.
- Foster cooperative interagency, Federal-State, and government-industry partnerships to solve pollution prevention issues.
- Actively demonstrate and implement “off-the-shelf” technologies that ensure the mission capability of DOE facilities.
- Integrate pollution prevention measures into all appropriate operations.

Sub-objective 6.4 Encourage the development of strong domestic and foreign markets for DOE-developed, innovative pollution prevention technologies.

- Develop, demonstrate, test, evaluate, and implement innovative pollution prevention technologies at DOE facilities.
- Forge partnerships with environmental technology firms abroad to export DOE-developed pollution prevention technologies.

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